

American Robin

Turdus migratorius

DESCRIPTION

The American robin is the largest member of the Thrush Family in North America. It is one of the most well known birds in the United States, seen in both rural and urban settings, and commonly thought of as a harbinger of spring. Mature male birds have cinnamon-red to brick-red underparts, gray to gray-brown upperparts, dark heads, white throats streaked with black, small white crescent marks above and below the eyes, and a yellow bill. Mature female birds are similar, but with plumage paler overall. Juvenile birds are somewhat similar, but have dark spotting on the underparts, pale spotting on the upperparts and wing coverts, entirely white throat, and less defined white markings around the eye.

BODY SIZE

The American robin is a familiar perching bird comparable in size to northern cardinals and blue jays. It has a mean total length and weight of 25 cm and 77 g, respectively. Mean wing length of birds from the eastern and north-central United States is 124.7 mm. Mean tail length (through measurement of median tarsel length) of birds from the eastern coastal plain is 33.0 mm. Males are larger than females in most measurements throughout the range. For example, examination of 26 adult birds in winter season from New York yielded a mean female body mass of 83.6 g, which was 2.6 g less than males (Sallabanks and James 1999).

In The Primary Study Area: There are no body size data available for American robins from the primary study area.

DISTRIBUTION

The American robin is found throughout most of North America. It is absent only from extreme northern Alaska, Canada, and Greenland, outside of rare vagrant individuals.



Figure 1. Range of American robin in North America.

The American robin has also been sighted as a rare vagrant in several European countries. It is extremely adaptable, occurring in a wide array of ecosystems and ascending to 3,500 meters in Mexico. Its far-ranging distribution and variable foraging habits are shared with few other birds in North America (Sallabanks and James 1999).

The American robin occurs as a breeding population over most of North America. In

addition to extreme northern North America, where the American robin is absent altogether, only a few areas of the far southern United States and portions of Central America are not utilized as breeding territory by this species. The breeding range of the American robin can be divided into two regions: areas that are inhabited by birds during the winter (though not necessarily the same individuals) and areas that are not. The boundary between the United States and Canada forms an approximate line that separates these two regions. South of this line, American robins can be found as over-wintering populations. Conversely, the boundary between the United States and Mexico forms an approximate line that separates year-round range from wintering only range. South of this line, which includes southern Florida, Louisiana, and Texas, and a portion of the desert southwest, American robins do not breed (Sallabanks and James 1999).

Seven subspecies of the American robin are currently recognized (Phillips 1991). New England's breeding population is *Turdus migratorius migratorias*. This subspecies has the largest range of any race, occupying most of the northern half of the United States and Canada (except the Maritime Provinces).

MIGRATION

Large seasonal migrations occur over most of North America. Individuals are thought to respond, in part, to food resource availability and weather. Migrations are, therefore, complex and are not simple north-south movements of individuals. Furthermore, American robins do not appear to be confined to north-south movement. Individuals from a similar wintering area can be found in widely scattered, northern locations in the summer, indicating extensive east-west movement (Sallabanks and James 1999). This species appears to be more nomadic than other species as it does not always return to the same breeding area in subsequent seasons (Stevenson and Anderson 1994).

Vernal migrations generally begin with aggregations of large wintering roosts. These aggregations shift their location in response to food depletion and cold fronts. In late February, individuals begin to move northward toward breeding sites. American robins follow the general northward progress of the mean daily three degrees Celsius isotherm, reaching Massachusetts by March (Tyler 1949). Conspicuous flocks appear in the spring on manicured lawns and other snow-free terrestrial areas (Sallabanks and James 1999).

Autumnal migrations of the American robin begin with individual birds becoming more gregarious. Movements begin in Massachusetts around early August. Resident summer birds, however, will not have completely left until late October (Tyler 1949). New England does possess wintering populations of American robins, and, therefore, individuals are occasionally seen where bare ground and fruit-bearing plants are present.

Migratory behavior is a genetically programmed trait that predisposes American robins toward flocking and seasonal movement. Hand-reared fledglings were noted to develop restlessness at dusk during the time wild birds were aggregating in roosts (Eiserer 1979). Winter migrations sometimes consist of more than one species. Very large flocks mixed with species of blackbirds have been observed (James and Neal 1986). Migrations tend to occur more commonly during the day, as American robins strike television towers less frequently than many regular nocturnal migrants (Stevenson and Anderson 1994).

HABITAT

American robins can be found in closed canopy forests, woodlands, fields, and residential areas. They are most commonly observed, however, foraging in the summer season in cleared areas with short herbs, such

as natural forest openings, lawns, and recently cleared or burned stands. Studies have shown that American robins frequently breed in suburban areas, riparian forests, and early successional forests (Martin 1973, Hutto 1995, Sallabanks 1995). As would be expected, some variation does occur continent-wide, and various closed-canopy conifer communities are preferred in the western United States (Sallabanks and James 1999).

Wintering habitat is quite similar to breeding habitat, though populations will largely have originated from more northern or higher elevation sites (Sallabanks and James 1999). American robins will move in flocks to areas with food resources. This includes suburban areas, south-facing slopes, and other sites with small, fleshy fruits.

Nesting occurs within specific microsites contained by the breeding habitat (Sallabanks and James 1999). Though there is tremendous variation, some patterns do emerge. First nests of the season are likely to be low in conifer trees, many nests less than three meters from the ground. Later nests, however, are more likely to be higher and placed in

deciduous trees. Nests are usually constructed to be sheltered from rain beneath the layer with largest volume of foliage and firmly supported. Buildings, cliffs, ground thickets, tree stumps, and road banks are additional sites where American robins occasionally nest.

In The Primary Study Area: Data on habitat use by American robins from the Housatonic River ecological characterization studies are summarized in Table 1. American robins were observed in many areas of the primary study area. Although they could be seen flying over or temporarily roosting in most locations, only certain areas and natural communities were routinely used for foraging. American robins were most frequent in canopy openings and areas with short herbs near or adjacent to suburban and residential areas. Mowed lawns, power line rights-of-way, agricultural fields, and fallow pastures were commonly used habitats. Transitional floodplain forests were also used, but these areas were primarily adjacent to fields and house lots and lacking dense, robust herbs. Winter use of the study area by American robins was more restricted to suburban lots and shrub edges where small, fleshy fruits persisted on plants.

Table 1. Habitat use by American robins in the primary study area

Habitat Codes and Natural Community Classifications																					
Wetland Habitats										Terrestrial Habitats											
ROW	ROW & PAB	SHO	PFO				PSS	PEM	WM	VP	SW	MW	HW		OF	AGR	RES				
Medium-gradient stream	Low-gradient stream	Riverine pointbar and beach	Mud flat	Red maple swamp	Black ash-red maple-tamarack calcareous seepage swamp	Transitional floodplain forest	High-terrace floodplain forest	Shrub swamp	Deep emergent marsh	Shallow emergent marsh	Wet meadow	Woodland vernal pool	Spruce-fir-northern hardwood forest	Northern hardwoods-hemlock-white pine forest	Successional northern hardwood forest	Red oak-sugar maple transitional forest	Rich mesic forest	Cultural grassland	Agricultural cropland	Residential development	
		B		B	B	B	B	B			B	B	B	B	B	B	B	B	B	B	B

ROW = Riverine Open Water
 SHO = Shorelines
 PFO = Palustrine Forested
 PSS = Palustrine Scrub-Shrub
 PEM = Palustrine Emergent
 WM = Wet Meadow
 PAB = Palustrine Aquatic Bed
 VP = Vernal Pool
 SW = Softwood Forests
 MW = Mixed Forests
 HW = Hardwood Forests
 OF = Open Fields
 AGR = Agricultural Croplands
 RES = Residential
 Season of Use
 B = Breeding
 M = Migration
 W = Wintering
 Y = Year-round
 Shading = observed in study area

HIBERNATION

American robins use seasonal migration to avoid cold stresses.

HOME RANGE AND TERRITORIALITY

The home range size of the American robin is dependent on several factors, including population density and season (Sallabanks and James 1999). Breeding range area for 33 pairs in New York was approximately 0.3 – 0.5 acres in New York (Howell 1942). An area of approximately 1.0 acre was reported from Wisconsin by Young (1951). An area as large as 2.0 acres was reported from Tennessee by Pitts (1984). Males use a combination of song and aggressive displays to defend breeding territories. Displays include charging and run-and-pause movements. It is thought that American robins maintain individual distances of at least one body length except in feeding aggregations (Kemper 1971).

Winter territoriality occurs in the form of fruit defense (Sallabanks and James 1999). Territorial displays target other American robins as well as other species of birds. Pietz and Pietz (1987) observed a single American robin defending a fruit-laden apple tree from cedar waxwings. The robin could successfully repel up to 15 cedar waxwings. Sallabanks (1993) documented feeding behavior differences between American robins feeding within their defended territory and robins that were intruding on defended territories. Resident birds fed longer, more slowly, and ingested more fruits than intruding birds.

BREEDING

Males usually arrive a few days earlier than females to the northeastern United States. Pair formation occurs shortly thereafter. During this time, testes contain developing spermatocytes, and ovarian follicles are enlarged (Kemper and Taylor 1981). Females then begin nest construction, which normally takes 5 – 7 days for the first nest of the season. Several factors affect the construction time

including weather, which affects the availability of mud. Nests later in the season can be built in shorter periods of time. Female bird mass prior to egg laying is 8.4 percent reproductive tissue (largely eggs) (Howell 1942). The first egg is laid about 3 – 4 days after nest completion.

Female American robins construct a cup-shaped nest from mud mixed with grasses and small twigs (Canadian Wildlife Service 2001). Additional materials include string, cloth scraps, and paper. The first clutch of eggs is produced in spring or early summer. During peak egg laying of the first brood, males are fully spermatogenic and females have enlarging follicles or have ovulated at least once (Kemper and Taylor 1981). Dates of first clutch were 6 April to 24 July for south-central New York (Howell 1942) and 10 May to 6 July for northern Maine (Knupp *et al.* 1977). Females lay one egg a day for 3 – 4 days (usually 4). Incubation normally lasts 12 – 14 days after the last egg is laid.

American robins normally produce two broods each season, though three broods each season does occur and is more common in the southern United States. In south-central New York, 15 percent of observed pairs ($n=27$) were estimated to rear three broods (Howell 1942). The mean number of young produced per successful nest in Maine is 2.5 ($n=38$) (Knupp *et al.* 1977). Thirty-five percent of nests in Maine and 54 percent of nests in Illinois were estimated to produce young (Sallabanks and James 1999).

GROWTH AND DEVELOPMENT

Eggs are subelliptical to oval and have a mean length and weight of 28.4 mm and 6.3 grams ($n=30$), respectively, in south-central New York populations (Howell 1942). The eggs are incubated by body heat facilitated by a vascularized patch on the abdomen of the female. The female incubates for periods of about 40 minutes, where after she stands on the rim of the nest, turns eggs, and flies off for a break. During the incubation period, male

American robins may bring food to female, but this is unusual. Eggs generally hatch in the order they were laid over a period of 2 – 3 days (Kendeigh 1952). Each chick takes about 24 hours to hatch and breaks free of the egg by pipping a ring of fractures around the circumference of the egg with its egg tooth. Female American robins carry off egg shell fragments and may eat them. Hatchling mass ranges from 4.1 – 6.7 grams (mean=5.5 g) (Howell 1942).

Female American robins brood young for a few days after hatching until nestlings develop homeothermy. After approximately seven days, the female does not remain on the nest at night (Kendeigh 1952). Most American robins begin to feed their first brood in mid-May in New England (Sallabanks and James 1999). Nestlings are fed regurgitated food for the first four days after hatching (Tyler 1949). Both parents feed nestlings, delivering 6 – 7 feedings each hour to a single nestling, totaling 35 – 40 total feedings a day to each nestling. During the nesting period, adults take care of nest sanitation by eating, or later, carrying away fecal sacs produced by the nestlings (Hurd *et al.* 1991).

American robin chicks commonly fledge on day 13 (range = 9 – 16) after hatching. Nest mates leave the nest within a 24-hour period. Fledgling birds wander off for a short distance from the nest and are fed by the parents for a period of at least three weeks. Female American robins follow the fledglings at first, later only the male does. The female will begin a second nest at which time the male leads the juvenile birds to a communal roost site. At four weeks of age, juvenile birds can manage independently (Sallabanks and James 1999).

FOOD HABITS AND DIET

American robins are insectivorous and frugivorous. They eat a wide variety of invertebrates and fruit, depending on availability of food resources. American robins forage on the ground for terrestrial

invertebrates and fallen fruits and in vegetation for foliar invertebrates and fruit. The proportion of animal *versus* plant matter in the diet of American robins is heavily influenced by season. While fruit constitutes less than 10% of the diet in the spring (median values), fruit accounts for more than 90% of the diet in fall and winter (Wheelwright 1986). Summer diet proportions are intermediate between spring and fall/winter values.

Fruits of cherry (*Prunus*), dogwood (*Cornus*), sumac (*Rhus*), blackberry and raspberry (*Rubus*), greenbriar (*Smilax*), and blueberry (*Vaccinium*) are the most frequently eaten plants. American robins use clues such as fruit crop size, fruit size, and fruit pulpiness when deciding which fruits to consume (Sallabanks 1993). Butterflies and moths (Lepidoptera), ground beetles (Carabidae), snout beetles (Curculionidae), scarab beetles (Scarabaeidae), ants (Formicidae), and click beetles (Elateridae) are the most commonly eaten insects (Wheelwright 1986). Earthworms are an important food item in the spring.

Early nestlings are fed regurgitated food consisting of soft invertebrates, such as beetle larvae and earthworm parts, and fruits. As much as 30 percent of the food content may be plant material. Later nestlings can be fed more intact food items and are capable of dealing with indigestible parts (i.e., they can regurgitate the seeds of cherries) (Sallabanks and James 1999).

Some sectors of the nest receive more food than others due to the direction parents are likely to approach the nest. Nestlings, therefore, compete with one another for favorable positions in the nest (McRae *et al.* 1993). American robin nestlings also compete with each other by begging. Nestlings that start begging earlier, hold neck higher, and place beak closer to the parents beak receive more food (Smith and Montgomerie 1991).

American robins lack an anatomically distinguishable crop. They do, however,

possess an extendable esophagus that acts similar to a crop. American robins have been observed packing fruits into their esophagus in response to abnormally low temperatures. Storage of food in an extendable esophagus may allow birds to overcome constraints of food-processing by the digestive tract to avoid death by freezing in winter periods (Sallabanks 1997).

ENERGETICS AND METABOLISM

Food ingestion rates for adult American robins has been estimated at 1,070 kcal/kg/d (SD = 220) (Hazelton *et al.* 1984 as cited in USEPA 1993).

POPULATIONS AND DEMOGRAPHY

Survivorship: Rate of survival of fledgling American robins to 1 November was calculated to be 25 percent (Young 1955). After the first six months of life, there is a 52 percent mortality rate in all age cohorts. There is, therefore, a nearly complete turnover of populations after six years (Farner 1945, 1949).

Age at Maturity and Life Span: American robins are capable of breeding in the first breeding season following hatching. One wild bird was documented to survive over 13 years, though most are not likely to live longer than 6 years (Farner 1945, 1949).

Mortality and Enemies: American robins experience most nest failures at the egg stage rather than fledgling stage (Kendeigh 1942). Nest failures are most commonly due to predation or desertion caused by disturbance or bad weather. Small mammals of the families Scuridae (squirrels) and Cricetidae (New World mice) are common predators of American robin eggs. Other nest or fledgling predators include jays, snakes, and falcons. Nest parasitism does occur by brown-headed cowbirds (*Molothrus ater*) that remove an egg before depositing one of their own in the host nest. American robins, however, do recognize brown-headed cowbird eggs and routinely

puncture them with their bill and then expel them from the nest. House wrens are known to puncture or dent American robin eggs (Sallabanks and James 1999).

Adults are killed by predators, poisoning, and infectious disease. Accipiters are the major avian predators of American robins, and include sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), and northern goshawk (*Accipiter gentiles*). As American robins frequent suburban areas, house cats can be a major predator (Sallabanks and James 1999).

American robin die-offs due to DDT use has been documented (Hickey and Hunt 1960, Wilson 1978). Furthermore, reduced nest success is observed in regions with DDT use. Pesticides and treatment of lawns with insecticides has also been shown to have negative effects on American robin populations (Sallabanks and James 1999).

At least four diseases are known to cause mortality in American robins, including *Yersinia tuberculosis*, avian pox, and an unidentified protozoan (Sallabanks and James 1999). Body parasites such as lice, flies, ticks and mites, and internal parasites such as worms are common. In southern New York, the American robin is heavily infested with the tick *Ixodes dammini* and is found to carry the Lyme disease spirochete *Borrelia burgdorferi* (Battaly and Fish 1993).

STATUS

General: American robins are capable of using a wide variety of open and forested habitats, as well as suburban areas. As a result, they are common throughout their range, including New England.

In The Primary Study Area: American robins were found in many of the natural communities occurring in the primary study area. They were most common, however, in open fields and rights-of-way associated with residential development in the upstream two-

thirds of the primary study area. American robins were abundant on lawns and at edges of lots adjacent to the ten-year floodplain. Figure 2 shows the locations where American robins were observed during the 1998 – 2000 field surveys.

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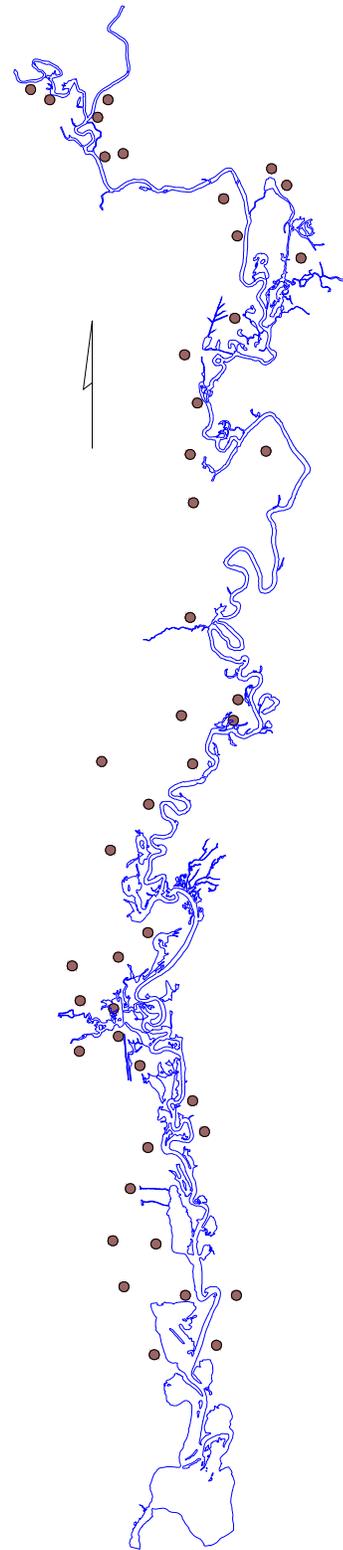


Figure 2. American robin sightings in the primary study area.

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